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Non-Profit Law and Consulting in Conservation of Natural Resources and the Global Environment

4/27/99

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Dear Dana and Alf:

I enjoyed our chat on April 20 on how to develop the water transfer component of the CalFed Program. It felt like progress to me. Since you have been assigned this burden to atone for your many sins, I want to make this as onerous as possible by reiterating that really the task is not just to figure out how to get water transfers unstuck, but to think through an integrated water management strategy at the intersection of transfers, agricultural efficiency improvements and conjunctive water management. These are all aspects of a unitary strategy—and any one really cannot be successfully developed in isolation. Sorry.

The strategic plan must start by asking what the role of transfers needs to be in the CalFed grand design. The answer is that improving mechanisms for transferring water is indispensable for satisfying the water supply reliability objective for all sectors, including environmental water needs to implement the ERPP. Water supply reliability improvements are measured in terms of enhancing drier year water deliveries—not average year deliveries. There are only two ways to do this: (1) capture peak flows that are now escaping beneficial use (yield augmentation) and (2) moving water from low valued uses to high valued uses during times of scarcity on a compensated basis. To do the former requires increased storage. Groundwater banking is the relatively benign alternative. Indeed, presumptively it is cheaper, faster and cleaner than the surface water alternatives in most cases. To be sure, some improvements in surface storage may actually increase the yield potential of conjunctive water management, but that is a second order concern. Conjunctive water management will require transfers of source water from surface to groundwater water banking sites, and from there to points of end use. Moving water from one rightsholder to another rightsholder will also require

transfers. This is all quite elementary. So, the roles of transfers in the CalFed grand design are:

- **Transfers to operationalize a system-wide conjunctive water management program:** Moving water from the terminal reservoirs of all of the tributaries of the central valley water system to groundwater banking sites that are selected for their geohydrologic suitability, accessibility to infrastructure, economic characteristics and absence of land use or political conflicts. This involves transactions between the terminal reservoir operators (Central Valley Project, the State Water Project, Modesto Irrigation District, Turlock Irrigation District, Yuba Count Water Agency, and Merced Irrigation District) and the groundwater bank, and the subsequent transactions between the bank and end users. The latter may include urban water agencies, agricultural water agencies that can afford to pay the full costs (for example, those growing relatively high value crops in areas with relatively low water reliability), the EWA and federal and state resource agencies. We need to look at the barriers to these types of transfers—which include economic, infrastructure, and regulatory factors. One reality is that the non-project reservoir operators will need to receive a price for this water that more than makes them whole on the risk of lost yield due to failure to refill their reservoirs. This can be modeled. If this analysis is too scary for CalFed, arrange to have it done outside of CalFed.

- **Transfers to generate water from agricultural efficiency improvements to benefit all sectors:** The water transfer program needs to create market incentives sufficient to induce especially lower value uses to conserve water and make it available for purchase by higher value users. This must be real water savings, not just a change in how and where it is exploited. The only real water savings come from reductions in evaporation, reductions in transpiration by crops, and reductions in losses to salt sinks. This means more investment in more efficient water delivery (canal lining) and application (drip systems) technologies and techniques (shorter furrows) when losses will percolate or flow to salt sinks and shifts in cropping patterns which consume less water per unit of farm profit generated. The empirical evidence shows that the best way to induce these investments is through price signals. These come in two forms—increasing the value of conserved water through markets and increasing the cost of irrigation water by removing the "free-rider problem". The free rider problem is a result of the incidental recharge of groundwater by over-application of imported project water, which is then pumped by non-project irrigators, Since 40% of irrigation water in the Central Valley comes from groundwater, we know this to be a common occurrence.[1] This can be prevented by recapture and transfer of irrigation deep percolation (and return flows) in the SWP, but not in the CVP. That is because the federal water transfer rules (unlike the state rules) do not permit transfer of water that would return to usable groundwater. How much water is available to met currently unmet needs under these type of transfers? Those are hydrologic and economic questions, not legal question. If this type of analysis is too scary for CalFed to perform, have it performed outside of CalFed.

[1] Just where it is most acute, and the consequences to water use patterns of requiring that this water be purchased from the projects, is part of what needs to be investigated by the strategic planning team.

- **Transfers mediated by local water districts coupled to groundwater storage:** Finally, we want a transfer system that carries over water acquired in wetter years for use in drier years. That is what we mean by improved supply reliability. To do this requires interannual storage. The easiest option is groundwater storage. That means that a transfer program needs to be coupled to a conjunctive water management program. The easiest mechanism is to enable, encourage and facilitate agricultural water districts creating an internal market, and then entering that market themselves in the wetter years to buy back water from its growers in voluntary, compensated transaction, use that water to recharge groundwater, and extract it in drier years to resell to its growers as a supplement to supplies. That does two beneficial things: (1) it provides market incentives to conserve in wetter years when the annual market is not providing much incentive. This is essential because the type of investments described above require multiple years to pay off. They will not be made where market incentive operate only sporadically. (2) If districts can provide some of their interannual storage needs internally, that will allow them to back off the surface water delivery system to some degree in drier years, making more water available for the environmental and urban needs in those years. In sum, this strategy improves water supply reliability for all sectors when it is needed most. Setting up a system of this sort also requires mostly hydrologic and economic expertise, not legal expertise. If this is too scary for CalFed, arrange to have this analysis done outside of CalFed.

This is essentially what we need a water transfer—water efficiency—conjunctive management component of CalFed to do. A team of highly credible experts is now needed to map out how to accomplish this and how to optimize the system-wide costs and benefits of doing so. Since the principal questions are hydrologic, economic and to some extent legal, these are the disciplines that need to be assembled. These should not be stakeholders or stakeholder representatives whose prime interest is in positioning themselves to achieve their individual water supply or profit-generating goals. Remember, the objective is to maximize system-wide benefits. Within that equation, there may well be winners and losers. The purpose of the analysis is design an optimal system and quantify these costs and benefits and their distribution. Stakeholders who share this set of objectives might be valuable members of a strategic planning team.

CANDIDATES FOR THE STRATEGIC PLANNING TEAM:

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Mark Grismer
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Legal & Institutional
Bill Blomquist—U. Ind.
Robert Glennon
Brian Gray
Greg Thomas (if not too controversial)
Buzz Thompson
Gary Weatherford

I hope you find these suggestions useful. As always, we at NHI would be pleased to assist your important effort in any manner.

Yours sincerely,

Gregory A. Thomas

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